Use of Project-Based Learning in Increasing Students' Vocabulary Knowledge & Communicative Ability

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ABSTRACT

The paper reports on a study that examined the use of Project-Based Learning (PBL) increasing students' vocabulary knowledge. The study was conducted in some private institutes for some Iranian junior high school students. After applying the approach and conducting post-test, significant differences were observed. This approach can be used as a training tool to help acquire vocabulary. The Project-Based Learning (PBL) approach in education often generates justifiable enthusiasm among those who have become frustrated with the limitations of traditional lecture-based education. In recent years, it has been widely acknowledged that classes designed by utilizing Project-Based Learning (PBL) are effective in enhancing the problem-solving ability of students. In PBL-based classes, students worked in groups and tried to apply their knowledge to solve the problems by themselves; therefore, such classes were effective in improving students' vocabulary knowledge and communication abilities.

INTRODUCTION

"Education should have two objects: first, to give definite knowledge, reading and writing, language and mathematics, and so on; secondly, to create those mental habits which will enable people to acquire knowledge and form sound judgments for themselves."

Bertrand Russell (1872-1970) Skeptical Essays, 1928

Religious Origins of Didactic Instruction

For thousands of years, the main purpose of education was to provide religious instruction. Until the 20th century, there had been little other reason for education among the masses. The privileged elite received special instruction in most cultures or national groups, but the masses were involved in the hard labor of agriculture, warfare, building pyramids e.g. serving as slaves and doing the thousands of other menial jobs that needed doing within the community. In order to fill their niche in society, these masses needed muscle not intellect.

Priests have been the teachers, instructing the common man how to worship the gods. Their job has been to encourage the peasants to serve the political, military, commercial and religious elite. E.g. someone needed to grow the food to feed the privileged. Motivated by hunger, the masses willingly grew crops. It took religious education, however, to convince the peasants to support the church and state by giving them food. It also took religious education to convince young men to offer their lives in defense of the church and state. The purpose of religious instruction has been to convey church teachings. This was primarily accomplished through didactic teaching methods. The pupil "learned the words of the catechism by heart". It was a ritual of memorizing words and repeating them by rote. There was "little reason for expression of real thoughts and feelings".

Until the middle of the 20th century, much of American education followed the same pattern as religious instruction. Much of early American education was born out of the desire to perpetuate religious beliefs. The method of religious instruction used was, and still is the model for (and essentially has evolved into) didactic teacher-directed instruction, whereby an

authority (church or state) determines an appropriate subject matter and the teacher strictly "lectures" on the subject. Tests, without books or notes, are used to determine if the student has "memorized" the information. Passing the test has become the primary focus and an end to learning. As a result, there was/is little reason for the student to express real thoughts and feelings. Of course other methods of instruction have been included in American educational curricula, but no other method of teaching has remained so prevalent.

Today, Project-Based Learning is widely recognized as an effective methodology. Its advantages are well documented: students are known to develop greater communicative, thinking and problem-solving skills with PBL than with regular lecture-based education. PBL often also excels in making the relationship between various concepts within a subject more clear, and has with success been used in interdisciplinary courses.

Since learners depend on vocabulary as their first resource (Huckin and Bloch 1993), a rich vocabulary makes the skills of speaking, listening, reading and writing easier to perform. Therefore, there has been continuing interest in whether there is a relationship between having sufficient vocabulary knowledge for successful language communication.

Statement of the Null Hypothesis

In this study the following null hypothesis is formulated, the rejection of which is the aim of this study:

Project-based Learning does not have any significant effect on increasing EFL/ESL students' vocabulary knowledge at the intermediate level.

Communication

Classroom activities may be of various types. They may center primarily on usage or use. They may require the student to receive a message or produce one. They may involve whole class activities, small group interaction, or individual work. They may be based entirely on the text, related directly to the material in the text, or selected purposefully from other sources.

Classroom activities may enable the students to develop communication skills along with increasing their vocabulary knowledge. The crucial factor seems to be type of practice, not amount of practice.

REVIEW OF LITERATURE

A Brief History of PBL

For over 100 years, educators such as John Dewey have reported on the benefits of experiential, hands-on, student-directed learning. Most teachers, knowing the value of engaging, challenging projects for students, have planned field trips, laboratory investigations, and interdisciplinary activities that enrich and extend the curriculum. "Doing projects" is a long-standing tradition in American education.

The roots of PBL lie in this tradition. But the emergence of a method of teaching and learning called Project Based Learning is the result of two important developments over the last 25

years. First, there has been a revolution in learning theory. Research in neuroscience and psychology has extended cognitive and behavioral models of learning–which support traditional direct instruction–to show that knowledge, thinking, doing, and the contexts for learning are inextricably tied. We now know that learning is partly a social activity; it takes place within the context of culture, community, and past experiences. In addition, education has benefited from this research, as teachers have learned how to effectively scaffold content and activities to amplify and extend the skills and capabilities of students.

Second, the world has changed. Nearly all teachers understand how the industrial culture has shaped the organization and methods of schools in the 19th and 20th centuries, and they recognize that schools must now adapt to a new century. It is clear that children need both knowledge *and* skills to succeed. This need is driven not only by workforce demands for high-performance employees who can plan, collaborate, and communicate, but also by the need to help all young people learn civic responsibility and master their new roles as global citizens.

The most important recent shift in education has been the increased emphasis on standards, clear outcomes, and accountability. But this process will continue to evolve. PBL is a field that should be created by the practitioner in the classroom.

Teaching Content through Skills

PBL is highly context-specific. It serves to teach content by presenting the students with a real-world challenge similar to one they might encounter were they a practitioner of the discipline. Teaching content through skills is one of the primary distinguishing features of PBL.

The Instructor's Roles in PBL

A PBL Instructor DOES:

- Model different kinds of problem-solving strategies. Students also can model for one another a variety of problem-solving strategies.

- Question students about their learning process by asking meta-cognitive questions: "How do you know that?" "What assumptions might you is making?" These questions are meant to get students to become self-reflective about their learning processes, thus another primary feature of PBL is that it is process-centered more so than product-centered.

Improved Learning Strategies & Thinking Skills

Learning to Learn

Effective projects encouraged students to work on a problem in depth, rather than covering many topics superficially. Students also engaged in "just-in-time learning..." learning what is needed to solve a problem or complete a project, rather than in a preset curriculum sequence.

Life-long learning

Projects build learning experiences connected to the kind of learning one does throughout life, rather than only on "school" subjects. By using the real tools for intellectual work that

are used in the workplace, rather than oversimplified textbook techniques, students become familiar with the kinds of knowledge that exist.

Active Learning

We all learn best by "doing." In a well-designed project, students worked in a hands-on mode with the physical world. They gathered information and data, explore, create experiment, physically manipulate things, and organize information.

Cooperative Learning

Cooperative learning encouraged active engagement by the students in learning, and it also builds critical skills.

In the best projects, students regularly communicated and shared data and information with their peers and experts in the community. This helped to establish a close relationship between the students and the real-world context of problems and projects. Learning become less abstract and becomes more connected to its own lives and experiences.

Changing Roles and Increasing Participation

Students as Teachers

The age of the teacher as the primary fount of knowledge in the classroom is gone. Today, with the universe of experts and information available through the Internet, students can access new and relevant information not yet discovered by their teacher.

Teachers as Coaches

Teachers who involve their students in project-based learning activities also find their own role logically and naturally changing. Rather than being simple dispensers of knowledge, they discover their primary tasks are to guide and coach and mentor their students. They teach their students how to question, and how to develop hypotheses and strategies for locating information. They become co-learners as their students embark on a variety of learning projects which chart unfamiliar territory.

METHODOLOGY

What we did…

❖ Recognize students' inherent *drive to learn*, their capability to do important work, and their need to be taken seriously by putting them at the center of the learning process.

❖ Engage students in the central concepts and principles of a discipline. The project work is *central* rather than peripheral to the curriculum.

❖ Highlight provocative issues or questions that lead students to *in-depth exploration of authentic and important topics.*

❖ Require the use of essential *tools and skills*, including technology, for learning, self-management, and project management such as making newspapers in the target language.

❖ Specify *products* that solve problems, or present information generated through investigation, research, or reasoning.

❖ Use *performance-based assessments* that communicate high expectations, present rigorous challenges, and require a range of skills and knowledge.

❖ Encourage *collaboration* in some form, either through small groups, student-led presentations, or whole-class evaluations of project results.

Pre-test for Control and Experimental group:

S(G1)	S(G2)	X_1	X_2	$X - \bar{X}_1$	$X - \bar{X}_2$	$(X - \bar{X}_1)^2$	$(X - \bar{X}_2)^2$
1	1	17	17	4.47	4.7	19.98	22.09
2	2	16	16	3.47	3.7	12.04	13.69
3	3	16	15	3.47	2.7	12.04	7.29
4	4	15	15	2.47	2.7	6.10	7.29
5	5	14	14	1.47	1.7	2.16	2.89
6	6	14	14	1.47	1.7	2.16	2.89
7	7	14	14	1.47	1.7	2.16	2.89
8	8	13	12	0.47	-0.3	0.22	0.09
9	9	11	11	-1.53	-1.3	2.34	1.69
10	10	10	11	-2.53	-1.3	6.4	1.69
11	11	9	10	-3.53	-2.3	12.46	5.29
12	12	8	7	-4.53	-5.3	20.52	28.09
13	13	6	4	-6.53	-8.3	42.64	68.89

Table 1: Scores Of students for Control and Experimental Group in Pre-test

$$SD1 = \sqrt{\frac{\sum(X - \bar{X}_1)^2}{n-1}} = \sqrt{\frac{141.22}{12}} = \sqrt{11.76} = 3.43$$

$$SD2 = \sqrt{\frac{\sum(X - \bar{X}_2)^2}{n-1}} = \sqrt{\frac{164.77}{12}} = \sqrt{13.73} = 3.70$$

$$S\left(\bar{X}_1 - \bar{X}_2\right) = \sqrt{\left(\frac{S_1}{\sqrt{n_1}}\right)^2 + \left(\frac{S_2}{\sqrt{n_2}}\right)^2} = \sqrt{\left(\frac{3.43}{\sqrt{13}}\right)^2 + \left(\frac{3.70}{\sqrt{13}}\right)^2} = 1.39$$

$$T_O = \frac{\bar{X}_1 - \bar{X}_2}{S\left(\bar{X}_1 - \bar{X}_2\right)} = \frac{12.53 - 12.30}{1.39} = 0.16$$

Post-test for Control and Experimental group:

S(G1)	S(G2)	X_1	X_2	$X - \bar{X}_1$	$X - \bar{X}_2$	$(X - \bar{X}_1)^2$	$(X - \bar{X}_2)^2$
1	1	17	19	4.39	3.62	19.27	13.10
2	2	17	18	4.39	2.62	19.27	6.86
3	3	16	18	3.39	2.62	11.49	6.86
4	4	15	17	2.39	1.62	5.71	2.62
5	5	15	17	2.39	1.62	5.71	2.62
6	6	14	16	1.39	0.62	1.39	0.38
7	7	13	15	0.39	-0.38	0.15	0.14
8	8	12	15	-0.61	0.38	0.37	0.14
9	9	12	14	0.61	-1.38	0.37	1.90
10	10	10	14	-2.61	-1.38	6.81	1.90
11	11	8	13	-4.61	-2.38	21.25	5.66
12	12	8	12	-4.61	-3.38	21.25	11.42
13	13	7	12	-5.61	-3.38	31.47	11.42

Table 2: Scores Of students for Control and Experimental Group in Post-test

$$SD1 = \sqrt{\frac{\sum(X - \bar{X}_1)^2}{n-1}} = \sqrt{\frac{145.05}{12}} = \sqrt{12.08} = 3.47$$

$$SD2 = \sqrt{\frac{\sum(X - \bar{X}_2)^2}{n-1}} = \sqrt{\frac{65.02}{12}} = \sqrt{5.41} = 2.32$$

$$S\left(\overline{X}_1 - \overline{X}_2\right) = \sqrt{\left(\frac{S_1}{\sqrt{n_1}}\right)^2 + \left(\frac{S_2}{\sqrt{n_2}}\right)^2} = \sqrt{\left(\frac{3.47}{\sqrt{13}}\right)^2 + \left(\frac{2.32}{\sqrt{13}}\right)^2} = 1.14$$

$$T_O = \frac{\overline{X}_1 - \overline{X}_2}{S\left(\overline{X}_1 - \overline{X}_2\right)} = \frac{15.38 - 12.61}{1.14} = 2.42$$

df = n-1 _ 13-1= 12

T_c = 2.179

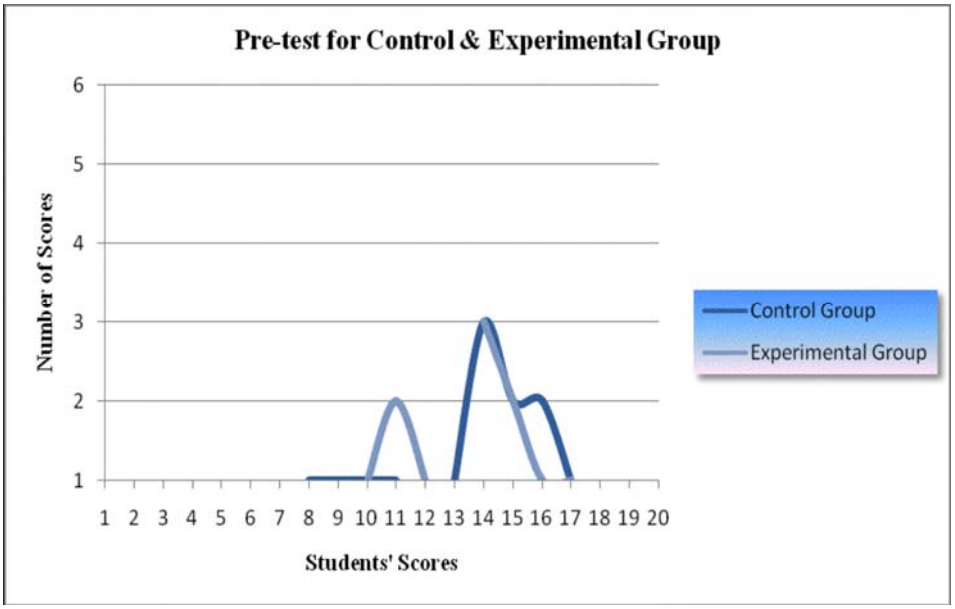

Figure 1: The Scores on an English Vocabulary test (Pre-test)

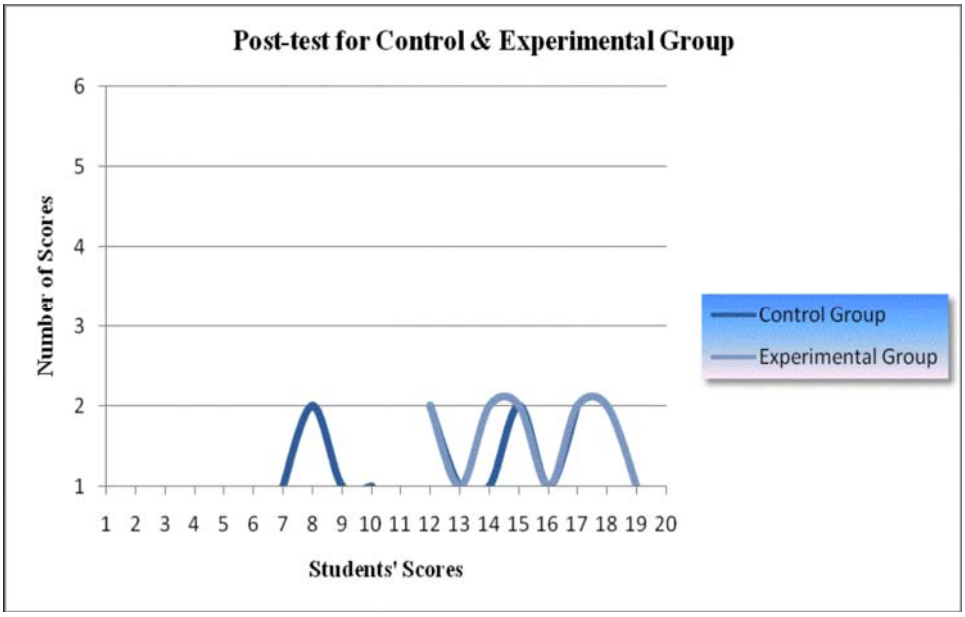

Figure 2: The Scores on an English Vocabulary test (Post-test)

$T_o > T_c$ _ H_o is rejected _ we can conclude that our hypothesis is approved.

FINDINGS AND DISCUSSION

As the above statistics shows, the final result of T_o which is 2.42 and is bigger than T_c which is 2.17 shows that experimental group did well.

By comparing T_o with T_c, we see that our null hypothesis is rejected and we can claim when we use this method the quality of learning increases.

CONCLUSION

As stated earlier, this study was carried out to determine what the role of using PBL in learning vocabulary of a new language is. So our question was "Does Project-based Learning have any facilitating effect on increasing EFL/ESL students' vocabulary knowledge at the intermediate level? "

For this research we made the students to learn new vocabularies of the language by making projects such as newspapers, language game, writing diary and giving them the choice of writing the article of book and asking them this question "How would they write the article if they were in the writers' shoes?" We finally observed that, this project had great effects on increasing students' vocabulary knowledge and communication ability.

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